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ABSTRACT

Provided are recommendations and reports related to teacher training in environmental education (EE). Recommendations from the Intergovernment Conference on Environmental Education (Tbilisi, 1977) are highlighted, indicating that environmental training of qualified educational personnel be a priority activity. Activities of the Unesco-UNEP International Environmental Education Programme are also highlighted. The Programme's approach has been the prior orientation of key personnel toward developing EE strategies at the national level, particularly pre- and in-service teacher training. Individual reports on the status of teacher training in EE in four regions of Unesco membership are also included (Africa, Arab States, Europe-North America, and Latin America and the Caribbean). Topics in the African report, focusing on various aspects of EE teacher education, are based on results of a questionnaire. The Arab States report focuses on several areas related to pre-/in-service EE teacher training. The Europe-North America report addresses pre-service EE (cognitive, affective, skill-process domain activities, EE methodologies, site utilization, and national/regional cooperation in EE) and in-service EE (cognitive, affective, skill/process domains, methodology, teacher education program implementation, and national/regional cooperation). Brief highlights of individual country activities are provided in the Latin America/Caribbean report. Highlights of the European Subregional EE Seminar are also provided. (JN)

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Teacher Training in Environmental Education

The environmental training of qualified educational personnel was considered to be a "priority activity" by the Intergovernmental Conference on Environmental Education (Tbilisi, 1977).

The Conference further stressed "the establishment at the national level of a programme of action with the aim, on the one hand, of familiarizing teachers and educational administrators and planners with different aspects and problems of the environment and, on the other, of giving them a basis of training which would enable them to incorporate environmental education effectively into their respective activities. This action should take the form of both pre- and in-service training" (Tbilisi Final Report).

Concerning personnel training, the Intergovernmental Conference recommended to Member States *inter alia* that: (1) environmental education (EE) be included in curricula for pre- and in-service teacher education; (2) in-service teacher training in EE be made available to all who need it; (3) environmental training be practical and relate to areas in which teachers will or already work; (4) educational and training institutions have the necessary flexibility to enable them to include appropriate aspects of EE within existing curricula and to create new environmental curricula that meet the requirements of an interdisciplinary approach and methodology.

The training of educational personnel in EE has been a principal goal and area of activities of the UNESCO-UNEP International Environmental Education Programme. The Programme's approach has been the prior orientation of *key personnel*, such as teacher educators, curriculum developers, educational planners, school administrators and supervisors as well as selected teachers, towards the development of EE strategies at the national level, particularly pre- and in-service teacher training. In this context, the International EE Programme since 1978 has organized or supported five regional EE training workshops for key personnel (Africa, the Arab States, Asia, Europe and Latin America); three subregional workshops (Asia, the Caribbean and Europe); and 24 national training workshops (Argentina, Bangladesh, Brazil, Bulgaria, Central African Republic, Chile, China, Cuba, Egypt, Guyana, Hungary, Ivory Coast, Jamaica, Korea, Lebanon, Malta, Philippines, Poland, Rwanda, Senegal, Sierra Leone, Ukrainian SSR, Upper Volta and Zaire).

The organization of these training workshops, particularly at the national level, has as its aims: (1) the exchange of information on the state of EE teacher training in the respective country - specific problems and tasks; (2) strategies for improving EE teacher training, especially through international cooperation and the adaptation of successful measures and practises of other countries; (3) development of model programmes and curricula for the pre- and in-service EE training of teachers; and (4) perspectives and future possibilities for international cooperation in this area.

Six experimental teacher-training modules in environmental education are under preparation as part of the IEE Programme. They are addressed to primary school teachers and secondary school science and social science teachers. For each of these three categories, a pre-service and an in-service training module have been envisaged, which will be adaptable by teacher-training institutions to their local situations.

The reports which follow on the status of teacher training in environmental education in four regions of Unesco membership (Africa, Arab States, Europe-North America and Latin America and the Caribbean) are based on more extensive reports by specialists for the International EE Programme. A report on the fifth region (Asia and Oceania), which is being prepared, will appear in a future issue of Connect.

Africa

The report which follows is based on a completed questionnaire received from the following areas and countries: West Africa (Ghana, Liberia, Nigeria, Sierra Leone, Upper Volta), East Africa (Ethiopia, Kenya, Tanzania, Uganda, Zambia) and Southern Africa (Lesotho, Swaziland, Zimbabwe). The results indicate that four out of the thirteen countries have teachers with EE training with a total of about 306, the vast majority of whom are in East Africa. There is general agreement that there is not a sufficient or adequately trained number of teachers for the region.

There is no formal EE in teacher-training colleges, but in West and East Africa especially there is an environmental component in such subject fields as food, water, air, land conservation and population growth and an attempt at integrating courses in general with the environment as one of the integrating themes. In Southern Africa environmental education is conducted mostly through parent meetings at schools and through school children themselves.

Respondents indicated that the problems encountered in incorporating EE into the curricula of teacher-training colleges were largely those of lacks and shortages in (1) an appreciation of the importance of EE, (2) adequately trained teacher educators, (3) scheduled time in crowded programmes, (4) EE materials for teacher use, (5) opportunities for field studies and (6) funds.

Solutions proposed, in addition to meeting the above lacks and shortages, involved a national policy for the inclusion of environmental themes in existing disciplines, development of new syllabi with environmental components, orientation toward community education on

local environmental problems and their solution, and organization of seminars and workshops, particularly for in-service EE teacher-training.

The general picture presented by all countries was a need at the ministerial and interministerial level for development and support of national policies for introducing or strengthening EE in schools generally and in teacher training particularly. Stress was also given to the establishment of regional teacher-training institutions to help meet national needs, lacks and shortages in EE.

The Arab States

Environmental education is relatively new and the EE programmes of many Arab States have been strongly influenced by programmes sponsored by Unesco and the Arab Educational, Cultural, and Scientific Organization (ALESCO) in cooperation with UNEP. There is general recognition on the part of Arab educators of the importance of preparing teachers who are motivated and capable of incorporating the environmental dimension into the various disciplines.

Pre-service teacher training in environmental education

The two principal institutions for preparing teachers of the Arab States are the teacher-training institutes and the universities.

Teacher-training institutes generally admit students who have passed the secondary education certificate examination (in Oman the intermediate certificate is required). These students are qualified after two years' instruction to be teachers in primary schools. As part of their study, they engage in practise teaching so as to be familiar with the syllabi they will use after graduation. These syllabi have a varying emphasis on environmental concerns, according to the country. Most teacher-training institutes pursue programmes that deal with some environmental issues in the different disciplines.

In Bahrain, special lectures and seminars in EE are conducted for student-teachers. In both Bahrain and Qatar, teacher-training institutes have been annexed to universities (forming the nucleus of the Gulf University in the case of Bahrain), which means that the qualification of teachers has been raised to the university level. In Kuwait, two courses in EE are being given to student-teachers. There is a plan in Oman to introduce EE in teacher-training institutes in the very near future which will coincide with the new emphasis on environmental concerns to be incorporated into school syllabi.

As for *universities* in the Arab States, the EE situation is generally the same except for the fact that university graduates are prepared in Education and Academic Faculties to teach in intermediate and secondary schools. In most universities environmental issues are taught in the different disciplines rather than in an interdisciplinary manner, leaving it to the students to integrate the knowledge from the different fields. Some universities, however, deal with environmental issues in a more integrated fashion through special lectures or courses.

The Education Faculty of Ain-Shams University, Cairo, for instance, offers EE lectures for students, who, upon graduation, teach in secondary schools. Various disciplines are combined to deal with specific environmental problems and some research work is done in EE for Diploma, M.A. and Ph.D. degrees. For several years the College of Education, Abha, Saudi Arabia, has provided a special EE course which covers all aspects of the natural and built environment. Qatar University similarly offers a special EE course, titled "Man and the Biosphere", with lectures covering all the goals and objectives first formulated in the Belgrade Workshop "Charter". In Kuwait University, a course on "Man and the Environment" was introduced several years ago as obligatory for such university faculties as engineering, law, humanities and science.

In-service teacher training in environmental education

Although some Arab States had already introduced environmental concerns into their school programmes, most States undertook to do so following the regional EE meeting held in Kuwait, November 1976, in the framework of the Unesco-UNEP International EE Programme (see *Connect*, March 1977). Among the recommendations of the meeting was the in-service EE training of teachers, which was deemed of immediate priority.

As a follow-up to the regional meeting, orientation programmes were organized in many Arab States for school supervisors and heads of departments, so as to introduce EE aims and objectives in the teaching of the various disciplines. In turn this key personnel undertook, and is still undertaking, the on-the-job EE training of teachers.

Since EE remains a relatively new educational practice and there is a scarcity of professors in teacher's colleges who can conduct EE training programmes, Aleco has organized regional teacher-training workshops in collaboration with various universities (Ain-Shams, Alexandria, Baghdad and Yarmouk), sent a travelling team of experts to a number of States and issued a variety of publications with Unesco-UNEP support (source-books, teachers' guides, etc.). The team-teaching approach in a biology project conducted by ALECSO has served as a model of interdisciplinarity and integration.

The involvement of teachers in national EE projects outside the school has greatly benefitted them. An example is that of the water purification project in Jordan's Ghore area, where the Unesco-UNEP International EE Programme cooperated with the Jordanian Ministry of Education at the intermediate school level (see *Connect*, May 1978).

Europe and North America

Pre-service teacher training in environmental education

Present emphasis in the pre-service environmental education of teachers in Europe and North America varies from traditional, disciplinary, passive learning to direct-experience, interdisciplinary strategies. The cur-

rent situation is best revealed through a categorical review of the findings from documentation dealing with pre-service EE for teachers in respective countries.

Activities in the affective domain. Although documentary findings are scarce on EE of teachers in the affective domain, it appears that most of the activity in this aspect of EE is included as part of the coursework in general environmental study curricula. It is generally recognized that EE involving pre-school and early primary school children should concentrate on the emotional aspects of environmental appreciation. However, countries report little that indicates extensive efforts to increase teacher awareness of the environment as a means of enhancing their effectiveness in imparting environmental sensitivity to the younger students or to students in upper grade levels.

In Czechoslovakia single discipline study is found down to the nursery school level. Here student teachers are taught to use the overall framework of school studies to impart a more holistic environmental view in students. The emotive aspect of EE is sometimes worked into social and humanistic studies in upper elementary and secondary teacher EE. It is included in the curricula dealing with such topics as human society, social studies and philosophy.

Some teacher education schools in Norway have found that training in team teaching methods is an effective means of positively affecting teacher values. There is currently a need for equipping teachers with the psychological and sociological fundamentals of social change skills so as to prepare them for dealing with values education in the classroom.

Activities in the cognitive domain. In many European countries environmental study is usually covered as part of the traditional teacher education courses, especially in the natural and social sciences (France, Netherlands, Norway, USSR). Topics on the human and biophysical environment are also included in numerous other non-environmental courses: outdoor recreation, chemistry, economics and others. Ecological studies are often included as a segment of biological studies coursework.

Specific emphasis on ecological and environmental studies is given in such courses as ecological/ethological theories, energy flow and human environmental relations, nature protection and environmental education. Much of the pre-service EE of teachers in the USA and the USSR occurs through studies in traditional disciplines or visits to rural nature centers for field study.

Although there are some encouraging aspects of EE study in teacher education colleges, most of the courses are discipline oriented. Integration of environmental topics is left to individual students. In addition, a heavier emphasis is usually placed on cognitive environmental knowledge in the late primary through secondary grades.

Activities in the skill and problem-solving domain. One exemplary programme, at Lancaster University, UK, allows prospective EE teachers to develop these skills through heavy reliance on feedback following trial runs in the classroom and a flexible independent study programme. There are, however, few universities offering teacher education in problem-solving skills. It is usually for the teacher, following cognitive EE training, to develop his or her own abilities to deal with and teach effectively environmental problem solving.

Methodologies in EE. In the UK, environmental studies methodologies have been taught at teacher training colleges since the 1960's. The Federal Republic of Germany (FRG) included environmental protection in general methodologies education. Many other countries still lack effective programs in EE methodologies. Canada in particular acknowledges a great need for pre-service teacher education in EE methods.

Environmental studies are increasingly emphasizing involvement in local problems and real-life approaches through a variety of teacher education methodologies: investigations (UK), field study (France, Netherlands, UK), community involvement (USA and USSR) and in-class teacher training providing performance feedback to the student teacher (UK). Those countries realizing the values of the process of first-hand teacher education experiences but presently lacking extensive use of such techniques (i.e., Canada, Italy) are attempting to incorporate more of these approaches into the EE teacher programmes.

Studies of real situations offer many opportunities for greater interaction between teachers and students. Many countries recognize that effective EE must emphasize an empathetic relationship between teacher and student. A need for more direct student involvement has been outlined by experts at international meetings on EE. In order to meet these challenges, teacher education in EE methodologies must focus on the teacher and student as a learning team.

Many teacher institutes recognize the need for interdisciplinary methodological training, but there are few programmes providing for this need. Traditional, discipline-oriented educational approaches are frequent, from the nursery school level (Czechoslovakia) through elementary and secondary teacher education coursework (Bulgaria, France, Norway and Sweden).

Varying degrees of integration of environmental studies with other subjects and interdisciplinary methodological approaches may be found. Most teacher education colleges in Norway offer integrated science courses, as do many programmes in the UK. Some programmes contain specific courses in EE methodologies: Royal Danish College of Environmental Studies in Denmark, many colleges in the UK, and some schools in Czechoslovakia are examples.

The UK recognizes that EE lends itself to team-teaching methods; however, Italy points out that a lack of interdisciplinary teacher cooperation is a major constraint in present EE efforts. The Swedish Curriculum for the Comprehensive School includes collective teaching as an important component of the curriculum. Troms Teacher Training College in Norway emphasizes group work in discussions and during methodological training in the study of relevant literature. The integration of disciplines often depends on the lecturers' abilities to relate subject matter through cooperative teaching approaches.

Utilization of physical sites. These sites may be undeveloped lots, city or national parks, nature preserves, or field study centres. Findings in the literature are sparse pertaining to this subject. The UK makes extensive use of field study centres in EE for teachers. Here high value is placed on the EE of teachers at urban centres (approximately 80 percent of the students being taught in the UK live in an urban environment).

National and regional cooperation in pre-service EE for teachers. There are some notable efforts underway in cooperative EE ventures in Europe. The Council for Environmental Education, Reading, UK, advises and encourages cooperative local pre-service teacher education and courses. The British Volunteer Programme sends students in EE to other countries to promote cross-cultural understanding. "Harmonization of the school systems of Nordic Countries" has been the broad goal of Nordic educational cooperation under the Secretariat for Nordic Cultural Co-operation since the 1972 Nordic Cooperation Treaty. Extensive coordination of EE efforts, including government teacher education programmes, occurs through this highly successful programme.

In-service teacher training in environmental education

Most countries in the Europe-North America region have identified in-service teacher education as essential for effective environmental education. However, relatively few efforts have been made to initiate programmes that supplement the traditional training of practicing teachers.

Activities in the affective domain. Currently, the primary focus of EE in the affective domain is the development of attitudes that foster positive environmental behavior. Since 1973, much of Iceland's in-service teacher training in biological and ecological education has been aimed at adoption of and training in new methods and attitudes. The Norwegian Environment Project, a curriculum unit for grades 1-6, is oriented, in part, toward the development of attitudes and provides teachers with specific objectives within this area. Czechoslovakia has oriented its in-service programme toward developing an interest in environmental care and has recognized that the affective component of teacher training is a teacher's self-education. The UK has stated that valuing is one of the methodologies that teachers need to be aware of, and Canada's Simon Fraser University in British Columbia offers a Summer Institute in EE for pre-service and in-service teachers that focusses, among other concerns, on environmental ethics and lifestyles. In recent years, the Institute has been moving more toward educating teachers to deal with values.

Activities in the cognitive domain. One of the principal elements of in-service teacher education is teaching new developments in ecological, economic, policy and human ecosystem fundamentals. Czechoslovakia and the Netherlands have recognized the need for building a strong cognitive background in ecological and environmental principles. Bulgaria, Finland and Norway all offer courses or provide materials for teachers that are oriented toward increasing knowledge about environmental concepts. In the UK, the Council for Environmental Education has noted a lack of opportunity for training in wider aspects of EE, beyond the cognitive knowledge of environmental studies.

Activities in the skill and problem-solving domain. The Norwegian Environment Project has provided first to sixth grade teachers in the Nordic region with an EE programme that is oriented in part to the development of process skills. The Project provides detailed guidelines

for assisting practicing teachers in using the activities so as to most effectively build the students' background in this area.

The Netherlands recognizes a need for increased knowledge and skills of teachers and recommends a national training centre for EE to aid in meeting this need. The Biology Teachers Association of the Netherlands offers weekend exercises for in-service teachers aimed at developing problem-solving skills with differing degrees of external control.

The International Microteaching Research Unit at Lancaster University, UK, offers opportunities for teachers to focus in part on practice in specific skills with the intention of preparing teachers to deal with different methods of class organization. Canada's Summer Institute in EE (Simon Fraser University) also focusses on skill development in teachers attending its workshop.

Activities regarding methodologies. Most countries refer to deficiencies in teacher-training programmes, finding the majority to be theoretical and abstract. Programmes appear to be insufficient with regard to incorporating modern methods suitable for EE, including problem solving, practical experience and active participation of teachers and students in the learning process.

There are significant efforts throughout Europe and North America toward educating teachers in various EE methodologies. The Nordic countries have taken some steps in this direction, mainly through the provision of education materials and workshops that employ a variety of methods (Finland, Norway). The Biology Teachers Association of the Netherlands offers weekend exercises in EE that provide first-hand experience with field methods and problem-solving approaches.

Czechoslovakia has recognized that furthering the education of practising teachers must include methodical aspects and the FRG has noted that most of its programmes deal only with environmental problems and have built-in methodologies for handling the affective components of EE. The UK recognizes that teachers need to be aware of such methodologies as direct learning, first-hand materials, field studies, discovery and valuing and supplements its urban and rural studies with field work to move toward this end. The USA has developed at least one model for training upper primary teachers in multidisciplinary, multiprocess approaches to EE.

Two areas of methodology appear to have garnered considerable attention throughout the Europe-North America region. These are integrating EE into existing disciplines (EE as an interdisciplinary topic) and direct-learning approaches. The Helsinki Regional Meeting recognized the importance of direct involvement of teachers in interdisciplinary investigations and discussions on content and methods in EE. Some countries (Czechoslovakia, UK, Sweden) have made special note of this need, while others (Canada, Czechoslovakia, FRG, Netherlands) have initiated programmes that focus on helping teachers with interdisciplinary aspects of EE.

With regard to direct-learning approaches, Finland and Sweden have initiated summer field courses especially on laboratory methods, and the Netherlands has instituted a support group between the Institute for

Nature Conservation, school biology services, school advisory services, zoos, museums, botanical gardens, nature societies, etc. to help teachers without prior training in interdisciplinary projects. Since 1973, much of the in-service education in Iceland has included a trend toward more EE dealing with the school site and the community. Bulgaria offers courses for teachers on environmental problems that include excursions into the field and the community, and Italy suggests teacher workshops using prospective Mediterranean multipurpose coastal parks as sites to illustrate direct-learning concepts.

Activities in implementation of teacher education programmes. There are several approaches to implementing programmes to adequately train practicing teachers in EE methods and concepts. Face-to-face programmes, such as workshops and teacher centres, have been especially successful in recent years in the Netherlands, Poland, Sweden, USSR, UK and USA. Programmes via mass media have been employed in the UK and the USA, and clearinghouses for information and materials are in use in Canada, the UK and the USA. The Helsinki Regional Meeting endorsed the need for lifelong teacher education and recommended that in-service training be established by coordinating the work of education authorities, environmental authorities and mass media.

The Nordic Countries are among the most active countries in establishing in-service programmes. Model courses have been held for instructors from all five Nordic countries (Denmark, Finland, Iceland, Norway, Sweden), who then return to their home countries to offer the same programme to local practising teachers. The Norwegian Environmental Project includes curriculum units and instruction handbooks for first to sixth grade teachers throughout the Nordic region. Norway also touches on EE in a number of its existing in-service courses.

The Swedish National Board of Education Commission on Environmental Training at School has prepared manuals for teachers: A Week's Seminar on the Environment; Environmental Teaching Aids; Environmental Laboratory Exercises and Excursions; and Environmental Training on Technical and Economic Lines at the Upper Secondary Level. Sweden also recommends that every school have an EE coordinator.

The Netherlands has found that many of their in-service programmes fail in practicality and active participation. Czechoslovakia also sees the training of instructors as a major problem and offers special seminars and courses on the relationship of people to their environment to overcome this problem.

Each administrative region in the USSR has an institute for in-service teacher training. All secondary teachers are obliged to attend the institute each year where they receive some nature conservation instruction. Malta offers one in-service course for science teachers in government schools. Many in-service programmes are being implemented throughout the UK. Day and evening courses, many of them for university credit, are arranged by wardens of teacher centres, and some universities offer special EE degree programmes for practicing teachers.

The USA has recognized the need for various organizations to offer workshops and conferences for teachers. These organizations include unions, professional organizations, school district administrators, teachers and curriculum developers. Canada has taken little action in implementing programmes and has noted a lack of teacher interest in EE and a lack of trained teachers to implement such programmes.

Activities in national and regional cooperation. There has been much attention paid to the need to cooperate regionally and internationally in programmes aimed at preparing in-service teachers. Czechoslovakia has encouraged cooperation between specialists in environmental care problems in teams or in international cooperatives to ensure adequate information for teachers. The United States has established the ERIC system which provides an international clearinghouse on EE materials easily available to teachers.

The Nordic Countries exhibit the strongest international cooperation system; materials and prepared courses are offered jointly by the five Nordic countries with the intended purpose of sharing information and expertise between the countries. Model courses are held for instructors who then are trained to equip similar courses in their own countries, establishing a growing network of in-service training. Study units and instructional handbooks have been prepared expressly to form a coherent scheme of teaching materials in the five countries. The Nordic Cooperation Programme is administered by the Secretariat for Nordic Cultural Cooperation.

Teacher training in EE in Socialist countries of Europe takes place in a general pedagogical context of stressing social and political considerations as linked to and stemming from a particular productive system and form of society. EE concepts, goals and tasks are introduced early, then scientific content and practical work. Socially useful work is a component of teacher training, developing the necessary knowledge and skills for the future direction of school children in such activities as tree planting, flower shows, care of forest and fish reserves and nature protection in general. Instruction includes fundamentals of ecology in the science, chemistry and geography faculties (elective in other faculties) and the forms include lectures, seminars and field work. All teacher-training institutions and faculties have a special course on the protection and conservation of nature.

In Bulgaria, for instance, the Faculty of Chemistry and Biology of Plovdiv University offers a course on general ecology, which ranges from principles and concepts to the biological basis for the protection of the natural environment. In Czechoslovakia, the Pedagogical Faculty of Grads-Kralov University presents a course entitled "Environment", which deals *inter alia* with biogeography, dynamic balance in nature, the impact of human activity on the natural environment and what can be done about it. In the German Democratic Republic (GDR), the Pedagogical Institute's course emphasizes ecology, socialist use of nature and environmental protection.

In Poland, the University's Biology Faculty has a course which treats demography, industrialization and urbanism as well as water, air, soil, flora and fauna, etc.

in the USSR, pedagogical institutes offer an overall course on the protection of nature with both a historical and basic science content; faculties of biology, chemistry, geography and like sciences have an appropriately more intensive and specialized range of courses. In Yugoslavia, teacher-training colleges similarly offer a general course on nature protection as well as specialized courses for science teachers.

The in-service training of teachers in EE is being developed and conducted in a variety of ways, as can be noted in the examples which follow. In Bulgaria, an in-service teachers' institute holds a 10-day course for teachers and specialists on environmental conservation with lectures, classroom and field work. In Czechoslovakia, a similar institute includes an EE component in all retraining programmes, which individuals undergo every five years. In the GDR, there is also a 10-day series of lectures and practical work.

In Hungary, the essentials of EE are part of teacher retraining conducted by the Pedagogical Institute. In the USSR, teacher retraining in courses of a short period takes place regularly at an advanced teacher-training institute. A full two-year course is conducted as a programme of the people's universities. In Yugoslavia, there are centres for in-service training of teachers at the district, regional and republic levels. Courses are in the form of a seminar.

The problem of coordinating pre-service and in-service training of teachers is generally recognized as well as the work still to be done to train an adequate number of qualified teacher trainers in the field of environmental education.

Latin America and the Caribbean

The report which follows on the EE training of teachers in Latin America and the Caribbean is based on existing written material. Specific information about teacher training in EE is relatively rare, however, and conclusions must be tentative and partial.

Firstly, most EE programmes in the region, with a few exceptions, operate from a restricted concept of environmental education, that is, from its conservational and ecological aspects; the built environment and such social aspects as overcrowding and poor sanitary conditions are unaccented or disregarded. As a consequence, the teacher training undertaken by these programmes is directed more toward conservation and protection of the natural environment than toward finding ways to improve the human environment in an integrated manner. Secondly, teacher-training activities seem generally to be a secondary preoccupation in the EE programmes examined, as if they were incidental. Nevertheless, in each case below an effort has been made to bring out explicit teacher-training components or to reveal implicit ones as much as possible.

Argentina. A Study Centre for Atmospheric Contamination, Santa Fe, has been conducting teacher-training activities since 1974, particularly in the use of measuring

instruments and the interpretation of their data. A seminar was held in Córdoba in 1975 for teachers at various levels for the examination and development of higher education curricula and courses on conservation of renewable natural resources. A special course for teachers on population, ecology and the family was organized by Córdoba University in 1972. The Educational Research Centre of Buenos Aires has designed and tested a method for training educators in workshops where teachers, with the help of the media, are given the task of learning on their own how to adapt the educational process more effectively to the environment in which they are working.

Bolivia. The Centre for Educational Research and Action is undertaking a programme of community education aimed at improving the quality of life in marginal rural and urban areas. The programme centres on local schools; teachers and monitors, previously attend specially designed training courses.

Brazil. The municipality and State University of Campinas are carrying out a city project for the development of educational activities promoting community improvement of the human environment. The project is conducted by University graduates with the help of local authorities and graduates of the Faculty of Education, who receive practical training in the field. The resettlement of the marginal population around Brasília in Ceilandia has involved an integrated EE programme for the improvement of living and social conditions. The project, centred on the school, aims at community participation in a broad educational process. Teachers have been trained in courses and seminars to promote the process. A national EE training seminar in 1979 developed a teaching module and guide for EE instructors. A course for training primary teachers in ecology, complete with self-instruction guides, has also been developed nationally.

Chile. The Education Ministry is developing out-of-school youth programmes in various pilot centres, supported by the training of teachers and youth leaders. The Ministry has similarly developed a plan for training teachers for adult education that is closely related to the learners' environment. The Educational Research and Development Centre is carrying out education programmes in marginal urban and rural areas, conducted by specially trained teachers and community leaders and focussing on local living conditions and environment. The Centre in cooperation with Unesco has published self-instructional materials about environmental problems. Other EE materials, including teaching modules and guides, have been issued by the University Press, the Fishing and Hunting Division of the Agricultural Ministry, and the Centre for Pedagogical Development, Experimentation and Research.

Colombia. Three successive seminars have been organized on the teaching of ecology by the Institute for the Advancement of Higher Education. The first experimental workshop in EE, centred on the Saldaña River basin, was held in 1977. Teachers, student teachers and teacher trainers were among the participants; various training instruments were developed. The Education Ministry

cooperates with the National Institute of Renewable Resources and the Environment (INDERENA) in organizing training seminars for EE personnel inside and outside the school. The Ministry also cooperates with the National Coffee Industry Federation in experiments for transforming rural primary schools into community education centres for local environmental improvement. Emphasis is given to training teachers.

Costa Rica. The National University offers formal EE courses for teachers, a bachelor's degree in teaching environmental sciences, training for primary teachers, and seminars on various EE themes. **Cuba.** A national EE seminar was held in Havana in 1979 with the participation, among others, of normal school teachers and administrators and officials of the Education Ministry.

Ecuador. The Education Ministry and Massachusetts University (USA) have launched an adult education project involving previously trained teachers and monitors. The project's goal is to educate rural communities regarding the improvement of their environment.

Guatemala. The Education Ministry initiated a project in 1977 for incorporating the environmental dimension into early primary school education and organized four meetings to prepare 240 teachers and school administrators.

Mexico. Among the objectives of an agreement between the Ciudad Juárez University and Texas University (USA) are the EE training and exchange of teachers.

Panama. In-service training of teachers has been developed for an experimental project incorporating EE into primary school education.

Peru. Teachers have been trained for an EE project involving secondary schools of Lima as well as general community health education. Training teachers in community development is considered basic to Peru's educational reforms.

Venezuela. An EE pilot project, conducted by the Experimental Institute for Teacher Training, aims at introducing EE units into the third year of secondary schools. The Central University has added an EE component to a Latin American regional manual for basic education teachers. The National Centre for Improving the Teaching of Science has developed ecological materials for secondary school teachers.

The Caribbean. In *Bermuda* the Caribbean Conservation Association has organized EE courses for teachers and prepared audiovisual materials for their use. In the *Dominican Republic* the National Park Service has held an EE seminar for normal, secondary and intermediate school teachers. In the *Turks and Caicos Islands* the Society for the Protection of Reefs and Islands has organized EE courses for government officials, school teachers and others. In *Jamaica* EE workshops have been set up for primary and secondary school teachers.

Preliminary to many of these activities was the subregional EE training workshop for the Caribbean organized by Unesco and held in Antigua, 9-20 June 1980 (see *Connect*, September 1980).

European Subregional EE Seminar

Pre- and in-service training of teachers in environmental education was one of the principal themes of the European subregional EE seminar held in Vratsa, Bulgaria, 19-22 October 1981. The seminar was attended by about 450 participants from Bulgaria, Czechoslovakia, the German Democratic Republic, Hungary, Poland and the USSR as well as Unesco, UNEP and the Council of Mutual Economic Assistance.

One hundred and thirty preliminary EE reports were received from participating countries and institutions, summarized in book form, distributed and used as working documents at the seminar. Five workshops were organized for the different aims of the seminar: (1) pre- and in-service training of teachers in environmental education; (2) development of young people's EE culture through various school disciplines; (3) the role of out-of-school activities in EE pedagogy; (4) the roles of school teachers and youth organizations in EE; and (5) EE in pre-school education. There were also several field trips for all participants to a student forestry group, environmental clubs and various classes.

The seminar was immediately followed by a two-day expert meeting of the Council of Mutual Economic

Assistance (CMEA) to discuss the EE programme of Socialist countries for 1982-1985. In addition to plans for the promotion of EE nationally and regionally, participants at the CMEA meeting manifested interest in cooperating with the Unesco-UNEP International Environmental Education Programme, particularly in regard to the development of teaching/learning materials and activities concerning EE research and training at the national, regional and international levels.

At the Bulgarian national level, a group of scientists, higher educational lecturers, school administrators and teachers was formed to improve pedagogical theory and practise in the field of nature conservation. A study has also been prepared on the national situation vis-a-vis the training of teachers, both initially and during their service, in problems and improvement of the environment. It includes an historical survey as well as details on the institutions, units and associations that are involved in this training.

(For information and material on the seminar and the study, write to: The T. Samodumov Institute of Educational Research, Bul. Lenin 125, Bl. 5, Sofia 1113, Bulgaria.)

Important Notice

The Unesco-UNEP International EE Programme has undertaken an important survey among all Unesco Member States concerning EE progress and trends since the Intergovernmental Conference of Tbilisi in 1977. The information received through the survey will provide, for future guidance, a more accurate picture of the state of environmental education at the international level.

The questionnaire prepared for this purpose has been sent to Unesco National Commissions or appropriate ministries or bodies of Member States, requesting detailed information on the rise in the popular perception of environmental problems as well as future EE needs and priorities at the national level. The questionnaire devotes a large part, as well, to inquiries concerning the development of various aspects of EE, such as national EE policies, curricula, didactic materials, the training and retraining of teachers, and EE research and experimentation.

The results of the survey will be made available to the experts participating in an international meeting which will be convened by Unesco during the last half of 1982, whose aim is to review progress and trends in environmental education since the Tbilisi Conference. The results will then be widely disseminated through the information network of the International EE Programme.



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